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Sustainable Energy Advantage, LLC

California Feed-in Tariff Design & Policy Options

Policy Options & Interactions

California Energy Commission
Feed-in Tariff Workshop #2
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Robert C. Grace
Sustainable Energy Advantage, LLC

Presentation Overview

Purpose: To introduce the outlines of a range of potential future Feed-in Tariff policy alternatives for further discussion

- Policy Drivers
- Policy Issues & Options
- *Representative* Policy "Paths"
- Interactions between Policy Paths
  - ("policy trajectories")
- Next Steps

Policy Drivers

Goals, Objectives & Policy Drivers

Goals: e.g.
-reduce GHG
-Reduce fossil fuel use
- manage ratepayer cost & risk
-Etc.

Objectives: e.g.
-20% RE by 2010
-33% RE by 2020

Energy Commission staff/REC Committee 'Policy Drivers' for feed-in tariffs: e.g.

- High priority:
  - Quantity
  - Financial security
- Medium priority
  - Diversity 'A' = Diverse mix (technology & operational characteristics
  - Sustainable renewable energy
  - Price stabilization
- Lower priority
  - Diversity 'B' = other policy objectives (e.g. biomass)

Subject to constraints…

- available transmission
- siting/permitting
- feasible build-out time
- cost-effectiveness
- environmental/resource sustainability

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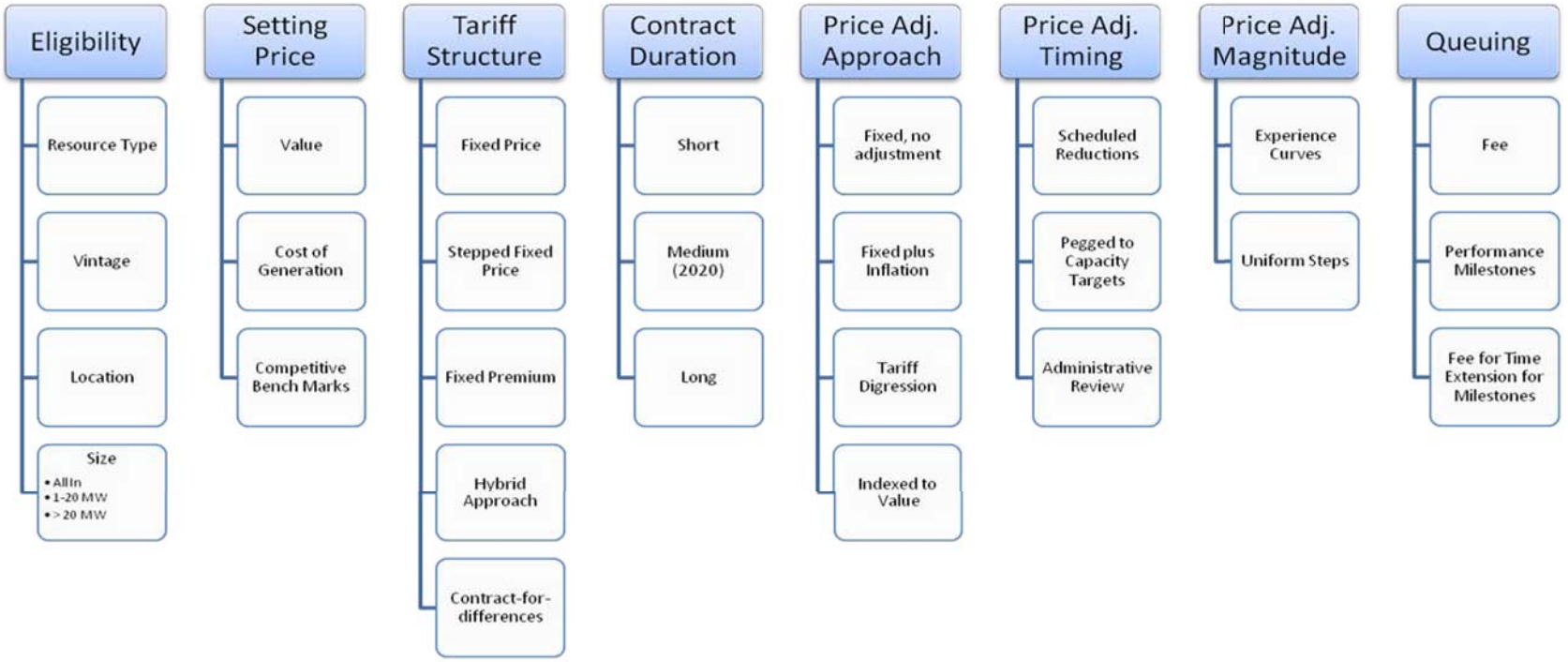
Policy Issue & Options

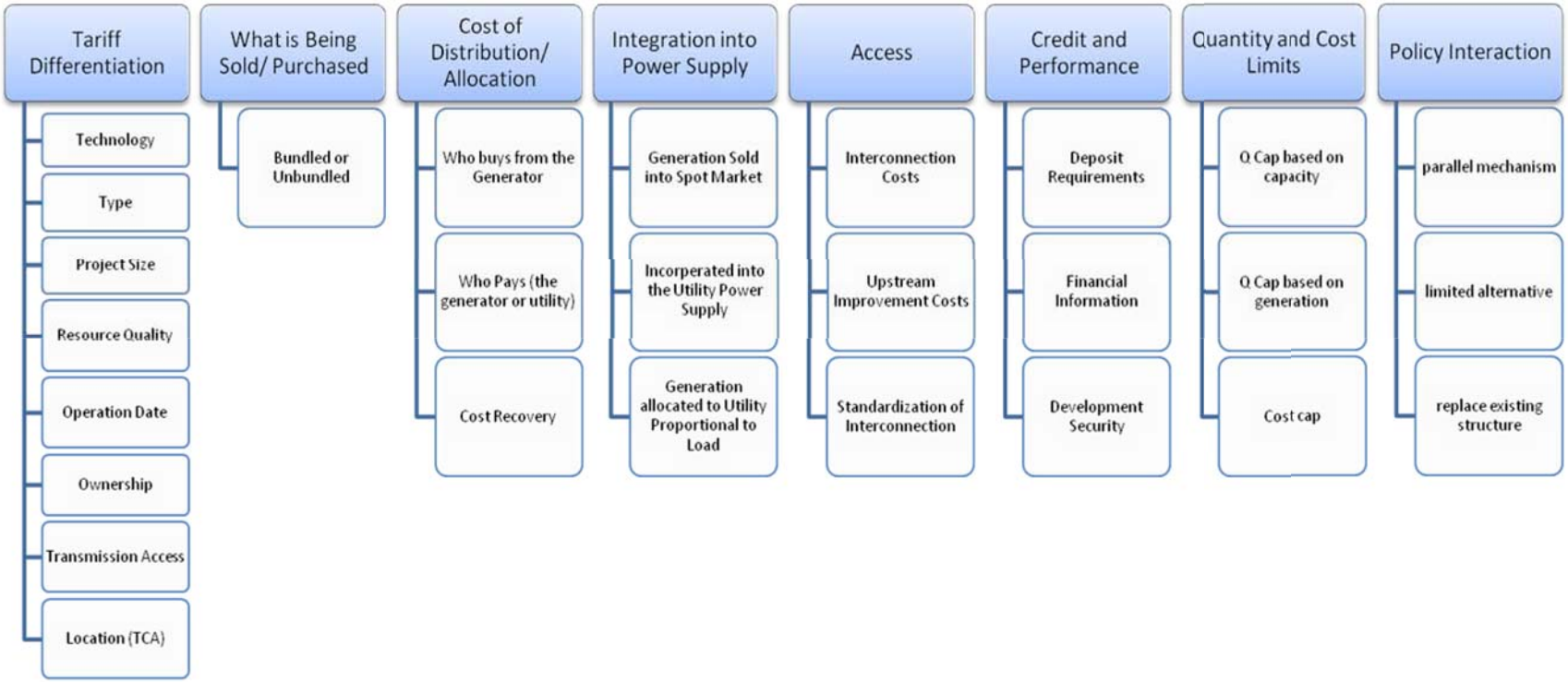
Feed-in Tariff Policy Design Issues (1)

(from *Exploring Feed-in Tariffs for California: Feed-in Tariff Design and Implementation Issues and Options* (referred to herein as the Issues & Options Report))



Feed-in Tariff Policy Design Issues (2)

(from issues/Options Report)



Feed-in Tariff Policy Design Options

- Issues & Options Report identified range of design issues and options
- Many potential combinations
- Sorted issues into 3 categories:
  - **Core policy issues**:
    - High-level policy decisions dictate CA's feed-in tariff strategy
    - Critical characteristics of alternative feed-in tariff policy paths
  - **Non-core policy issues:**
    - Important, modify feed-in tariff design, but don't fundamentally alter its core structure
    - Would require decisions to move forward, but are independent of policy path selected → appended to any of the selected policy paths.
  - **Implementation details:**
    - Issues that must be addressed, but do not require major policy decisions
    - Further discussion can be deferred

Core Design Issues

- Narrowed through consideration of:
  - Policy Drivers & input from Energy Commission's Renewables Committee
  - Pros & cons in Issues & Options Report
  - Practical constraints and California precedents
  - Stakeholder comments
  - Energy Commission staff and consultant analysis
- Some issues found to have single viable choice
- Remaining issues used to craft a representative range of 'policy paths'

Policy Paths

What's a Policy Path?

- A high level strawman outline of a Feed-in Tariff policy option
- Characterizes fundamentally distinct policy design alternatives
- Constructed from narrowed options for "core" design issues
- A more fruitful approach than considering all possible combinations of policy issues and options
- Intended to stimulate dialogue
- *Note: We are not limited to these paths!*

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Six Alternative Policy Paths

- Their development guided by…
  - Energy Commission policy drivers
  - Stakeholder comments
  - Lessons learned from feed-in tariff experience elsewhere
- Representative range of options…
  - Span a range… of direction, scope, timing
  - Potential forks on the road…
  - Yet interactions are possible leading to implementation trajectories
- Implicit seventh choice—maintaining the status quo

Differentiating Characteristics of Policy Paths

	#1	#2	#3
	Full-Market, unlimited size, differentiated cost-based w/ competitive benchmark, conditional triggered	> 20 MW, undifferentiated value-based 3-yr pilot in 1 utility	Differentiated Cost-based CREZ-Only, > 1.5 MW
Resource Type	All	All	All
Vintage	New, separate price for repowering	New + repowering	New
Size	No limit	> 20	>1.5
Timing	If RPS<20% contracted by 2010, start in 2012-13	Now (available for 3-year duration)	automatically in 2010-11 (so projects developed with transmission)
Scope	Full Market	Pilot (limited time, 1 utility)	CREZ-Only
Setting the Price	Cost-based with initial differentiated auction without MPR to set competitive benchmark for subsequent tariff	Value Based (time & peak differentiated with CO_2 & other adders)	Cost-based
Contract Duration	Long-term	Long-term	Long-term
Tariff Differentiation	Differentiation by technology & size	Not Applicable	Wind by size, geothermal, biomass by size, solar by technology
Limits	Capped at RPS targets; caps on more expensive technologies	Uncapped	Capped at CREZ Transmission limit

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Differentiating Characteristics of Policy Paths

	#4	#5	#6
	Solar > net metering pilot in 1 utility, cost-based with competitive benchmark	Sustainable biomass > 1.5 MW only, cost-based	Full market < 20 MW cost-based differentiated by technology & size
Resource Type	Solar	Biomass (sustainable)	All
Vintage	New	New	New, separate price for repowering
Size	> Net metering threshold	>1.5	<20
Timing	Now	Now	Now
Scope	Pilot within one utility	Full Market	Full Market
Setting the Price	Cost-Based w/ Competitive benchmark	Cost-based, calculated to consider sustainable yield of local biomass sources	Cost-based
Contract Duration	Long-term	Short- or Medium Term	Long-term
Tariff Differentiation	By size, type	By fuel and size	Differentiation by technology & size
Limits	Capacity limit will be established for the sponsoring utility.	Uncapped	Uncapped

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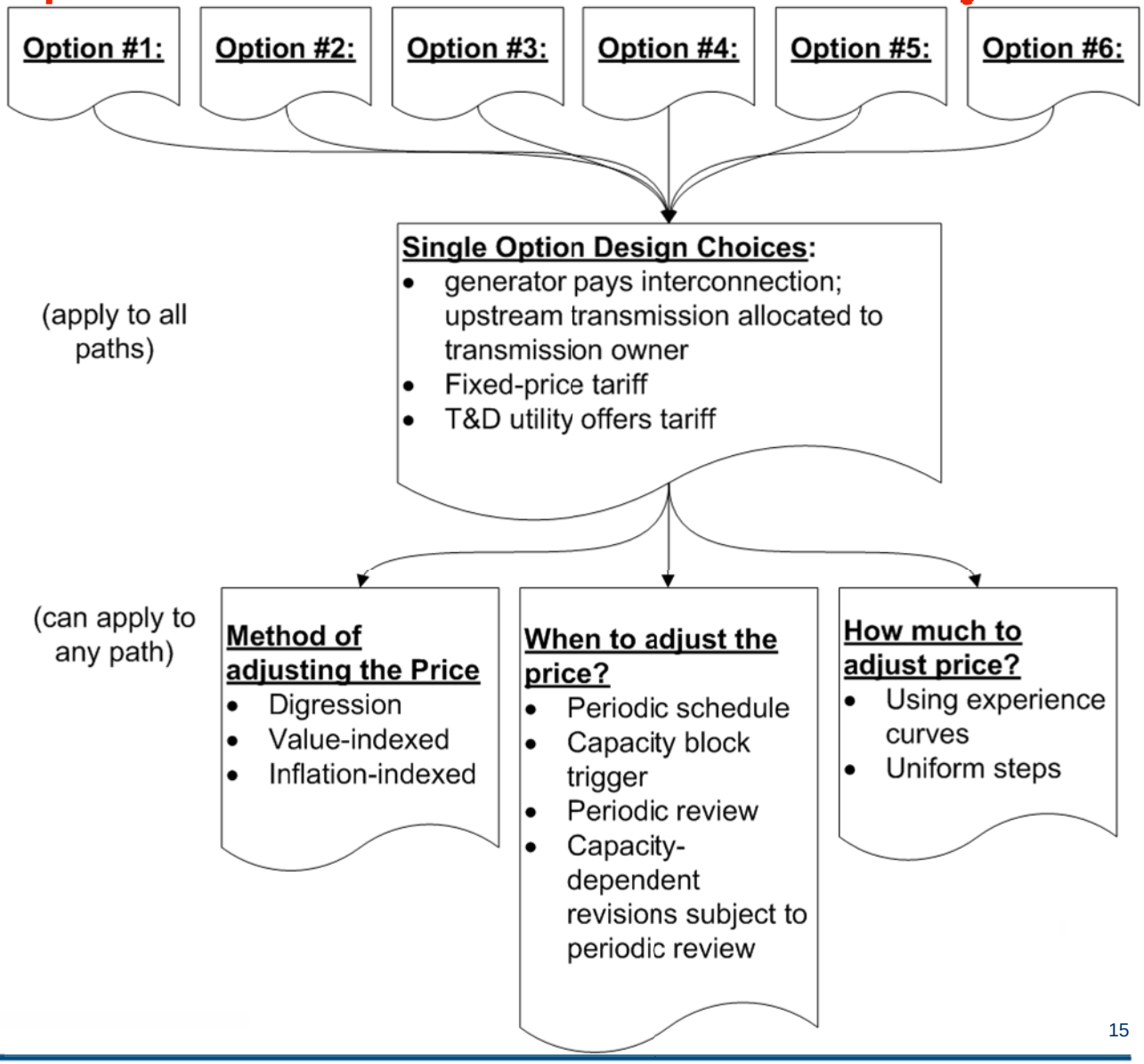
Representative Alternative Policy Paths



Policy Path #1: "Full German-style Tariff"

Unlimited size, cost-based and differentiated, but w/ competitive benchmarks, and implementation triggered by RPS performance; emerging resources capped

Resource Type	All
Vintage	New, separate price for repowering
Size	No limit
Timing	If RPS<20% contracted by 2010, start in 2012-13
Scope	Full Market
Setting the Price	Cost-based with initial differentiated auction without MPR to set competitive benchmark for subsequent tariff
Contract Duration	Long-term
Tariff Differentiation	Differentiation by technology & size
Limits	Capped at RPS targets; caps on more expensive technologies

PROS

- Rapid market growth
- Investor security
- Resource diversity
- Help stabilize rates, potential for wholesale price suppression
- 'Emerging cap' limits costs
- Trigger mechanism provides opportunity for RPS to perform

CONS

- Uncertain level of policy response
- Uncertain impact & cost
- Competitive benchmark untested
- Does not address technical barriers, such as transmission

Policy Path #2: "MPR on Steroids"

Generators > 20 MW, undifferentiated value-based, 3-yr pilot, 1 utility

Resource Type	All
Vintage	New + repowering
Size	> 20
Timing	Now (available for 3-year duration)
Scope	Pilot (limited time, 1 utility)
Setting the Price	Value Based (time & peak differentiated with CO_2 & other adders)
Contract Duration	Long-term
Tariff Differentiation	Not Applicable
Limits	Uncapped

PROS

- Immediate implementation, gain experience
- Pilot nature could control costs
- Could demonstrate whether standard offers make renewable projects more viable, increase investor security, reduce barriers
- (development & transaction cost, timing, risk premium, cost of capital, etc.)

CONS

- Unlikely to promote resource diversity
- Unlikely to achieve quantity targets
- Difficult for long lead time projects to respond
- May not provide hedge benefit of long-term contracts

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Policy Path #3: "CREZ Only"

German-style Differentiated Cost-based, Limited to CREZ, > 1.5 MW

Resource Type	All
Vintage	New
Size	>1.5
Timing	automatically in 2010/2011 (so projects developed with transmission)
Scope	CREZ-Only
Setting the Price	Cost-based
Contract Duration	Long-term
Tariff Differentiation	Wind by size, geothermal, biomass by size, solar by technology
Limits	Capped at CREZ Transmission limit

PROS

- Encourage generation development ASAP after CREZ transmission committed
- Same benefits as #1 (rapid growth, security, diversity, etc.).
- Prices potentially lower because of good resources
- Eliminates multiple-contingency transmission & solicitation concerns

CONS

- Same Cons as #1 (uncertain response and cost)
- No caps on emerging resources (can be mitigated)
- Speculative queuing because of transmission capacity limits?

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Policy Path #4: "Solar Only"

Systems > 1 MW (net metering threshold), pilot program in 1 utility, cost-based with competitive benchmark, capped

Resource Type	Solar
Vintage	New
Size	> 1 MW Net metering threshold
Timing	Now
Scope	Pilot within one utility
Setting the Price	Cost-Based w/ Competitive benchmark
Contract Duration	Long-term
Tariff Differentiation	By size, type
Limits	Capacity limit will be established for the sponsoring utility.

PROS

- Investor security
- Incentives for systems larger than net metering threshold
- Near-term CSP development
- Contributes to diversity
- Could be established quickly, either independently or with another path

CONS

- Does not fully achieve diversity goal
- Unlikely to meet 2020 goal
- Unlikely to stabilize or hedge prices
- Cap could cause speculative queuing and/or undermine investor security

Policy Path #5: Biomass Only

Sustainable biomass > 1.5 MW only, cost-based

Resource Type	Biomass (sustainable)
Vintage	New
Size	>1.5
Timing	Now
Scope	Full Market
Setting the Price	Cost-based, calculated to consider sustainable yield of local biomass sources
Contract Duration	Short- or Medium Term
Tariff Differentiation	By fuel and size
Limits	Uncapped

PROS

- Responds to Executive Order S-06-06, contributing to diversity goals
- Reinforces the importance of sustainable biomass feeds stocks
- Could be established quickly, either independently or with another path

CONS

- Does not fully achieve diversity goal
- Unlikely to meet 2020 goal alone

Policy Path #6: "German-style for Under 20 MW"

Full market < 20 MW cost-based differentiated by technology & size

Resource Type	All
Vintage	New, separate price for repowering
Size	<20
Timing	Now
Scope	Full Market
Setting the Price	Cost-based
Contract Duration	Long-term
Tariff Differentiation	Differentiation by technology & size
Limits	Uncapped

PROS

- Similar to #1
- Responds to stakeholder concerns about 'gap', lack of small project under RPS
- Smaller size limits cost impact concerns

CONS

- Generator size limits progress toward 2020 goals
- Challenge to choose the 'right' price administratively

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Interactions/Trajectories

Timing, Scope and Triggers in Policy Paths Create Implementation Options

- Policy paths, while distinct, are not all mutually-exclusive, independent alternatives
- Interactions & Trajectories
  - Some could be adopted in concert with others
  - Partial-market, or pilot scale or duration, can be thought of as potentially working together along a ‘policy trajectory’
- Some could be adopted while awaiting a specific trigger for a more comprehensive option…
  - Allowing modest initial steps (a ‘go slow approach) before launching a comprehensive feed-in tariff policy regime
  - Buying time to prepare if necessary to implement

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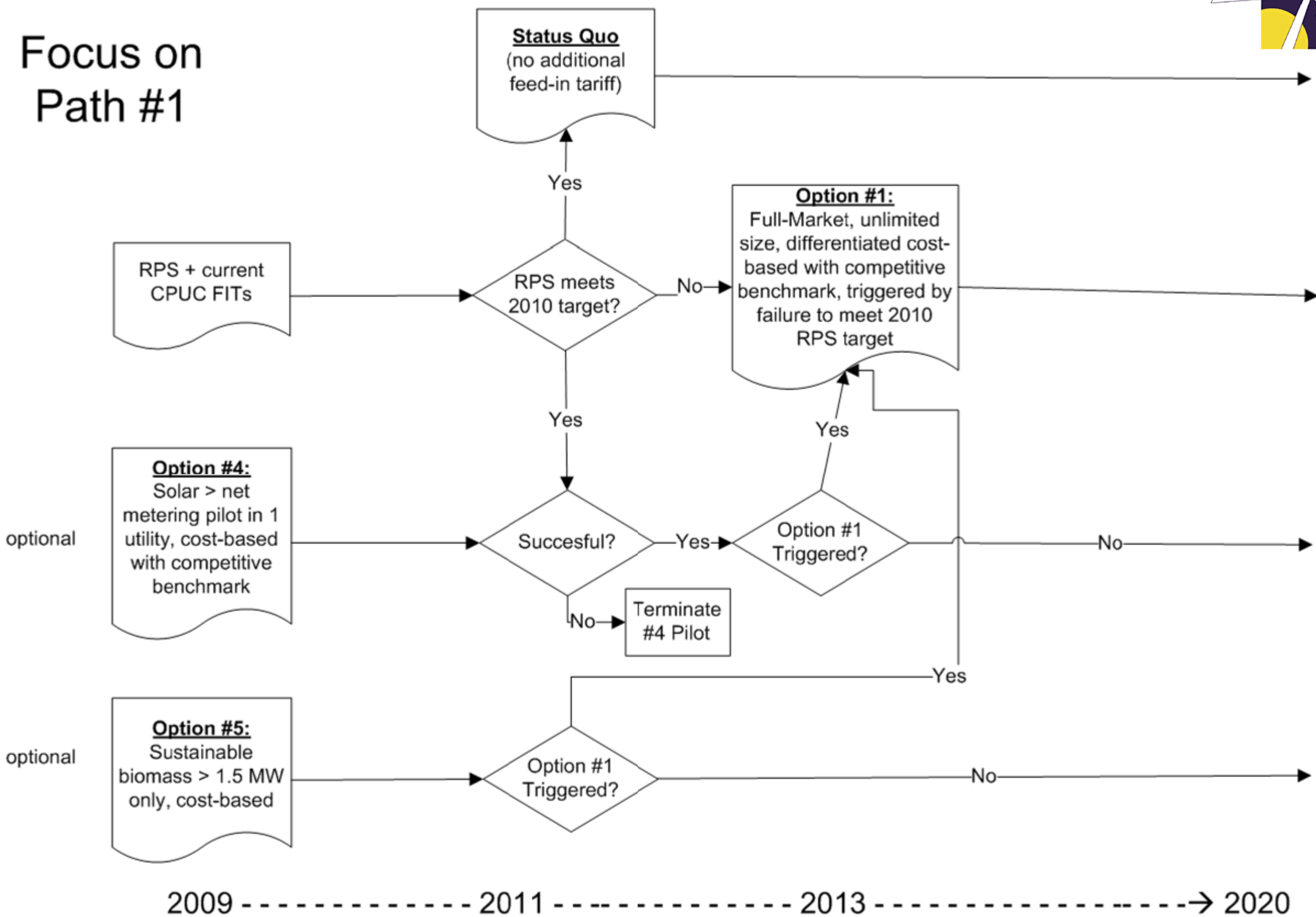
Example of Interaction Between Policy Paths

Focus on Path #1



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Other Policy Path Interactions

- Similar policy trajectory maps could be developed from the perspective of Policy Paths 2, 3, and 6.
- Policy Path 4 can be thought of as a transition to a broader policy that would, if successful, potentially be expanded to all utilities.
- Policy Path 5, on the other hand, would either constitute its own path, or be an adjunct to broader policy paths

Next Steps

Next Steps

- Six ‘Policy Paths’ outline representative alternatives developed
- They form the basis of discussion for the afternoon
- Energy Commission is looking to identify policy paths for which…
  - There is support?
  - There is lack of material opposition?
  - That can be implemented in the short term
  - That can work (requires a degree of stakeholder buy-in)
- Energy Commission is also looking to identify…
  - Specific basis of opposition, barriers, concerns
  - Challenges in co-existing with current RPS solicitation process
  - Ways to mitigate concerns by altering details of policy path

Questions?

Thank you for your attention.